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EVALUATION OF SOUTHERN PINE BEETLE INFESTATIONS ON U. S. ARMY CORPS OF ENGINEERS LANDS, LAKE ALLATOONA, GEORGIA

By

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INTRODUCTION

An aerial sketchmap and ground evaluation of southern pine beetle infestations was conducted on approximately 26,000 acres of U. S. Army Corps of Engineers lands, Lake Allatoona during April 1975 by the Asheville Office of Forest Pest Management (Figure 1). The infestations at Lake Allatoona are part of a Southwide outbreak involving approximately 50 million acres in 11 states. The Corps of Engineers had already salvaged approximately 6,000 cords of timber at the time of this survey. The beetle has been active on the area for over a year. However, the current outbreak is increasing rapidly with a potential for increased losses this summer.

METHODS

Standard aerial sketchmap and ground techniques were utilized during the current evaluation.[1/] A 100-percent aerial sketchmap survey was conducted over the 26,000-acre unit (Figure 1), and 17 spots of dead and dying pines were checked on the ground to confirm the cause of mortality, the percent of spots containing active infestations, and to assess the general condition of the beetle population.

TECHNICAL INFORMATION

Insect - Southern pine beetle, *Dendroctonus frontalis*, Zimm.

Hosts - The southern pine beetle will attack all species of southern yellow pine. However, loblolly pine, *Pinus taeda*, L., and shortleaf pine, *P. echinata*, Mill., are the preferred hosts.

1/ Detection of Forest Pests in the Southeast, 1970, USDA, USFS, SA, S&PF, Div. of FPM, Pub. S&PF-7, Atlanta, GA. 51 pp.

Type of Damage - Death of the tree is the result of cambial mining by the southern pine beetle as it constructs its gallery. The beetle also introduces the blue stain fungi, *Ceratocystis* spp., which slows down or blocks conduction of water in the stem.

Life cycle of the beetle - The beetles attack in pairs and construct a winding gallery in the cambium. Eggs are deposited in niches along the sides of the galleries. The eggs hatch into whitish grubs that further mine the cambium and then construct cells in the bark for pupation. The callow adults then mine through the bark to emerge. The complete life cycle takes about a month during the summer and as many as seven generations may be produced in a year.

RESULTS

Results of this evaluation showed a high level of southern pine beetle activity on the U. S. government land holdings at Lake Allatoona. The aerial survey revealed 182 southern pine beetle spots on approximately 10,000 acres of host type. Spots ranged in size from one to 500 or more trees. All 17 ground checked spots were caused by the southern pine beetle. One hundred percent of the spots were actively infested. Ground examination showed healthy brood and a high density per square foot of bark surface. There was a moderate concentration of predators and parasites present in the infested material. No beetle mortality was observed that could have been attributed to a microbial disease present in the spots examined.

This survey also showed that in the 182 spots observed during the aerial survey, 21,162 trees were dead or dying on Corps of Engineer lands. Ten thousand and fifty of these trees were currently infested with live beetle brood. The total estimated volume of affected timber present on the area at the time of this evaluation was approximately 349,500 cu. ft.

The mild winter and the high population potential indicate the outbreak will continue through the summer and fall of 1975.

The Corps of Engineers at Lake Allatoona should be commended for their excellent current suppression program. At the time of this survey they had salvaged 6,000 cords of timber and chemically treated numerous spots.

RECOMMENDATIONS

The southern pine beetle outbreak is expected to continue at a high level on Corps of Engineer lands at Lake Allatoona during 1975. It is unlikely that the suppression project will completely stop the outbreak; however, it can reduce the problem to a low level that can be maintained

with minimal additional losses. Infestations can be stopped in individual stands or areas by using methods outlined in the 5250 section of the Forest Service Manual which are as follows:

1. Removal of Infested Trees by Commercial Sale or Administrative Use. When infested trees of merchantable size are accessible, they should be removed by commercial sale or administrative use procedures. Logging of the infested material should begin immediately. Contract time limits should insure rapid removal.

   Where practical, and if host type is present, a 40- to 70-foot buffer strip should be marked and cut adjacent to and ahead of the most recently infested trees. This practice is effective in reducing the possibility of "breakouts". When only a small volume of infested merchantable material occurs in a spot, non-infested trees surrounding the spot may be marked to provide an operable cut.

   The order of priority for removing beetle infested timber from a spot should be as follows:

   Trees having nearly developed broods. (Usually the red and fading trees.)

   Trees having young broods. (Usually the green, recently infested trees.)

   Trees in the buffer zone.

2. Piling and Burning. Unmerchantable or inaccessible southern pine beetle infestations can be suppressed by cutting, piling, and thoroughly burning the bark of infested trees. The entire bark surface must be thoroughly burned to insure effective control. The order of priority for cutting, piling, and burning infested trees, particularly in large spots, is the same as paragraph (1) under removal of infested trees by commercial sale or administrative use. Cutting a buffer strip is not recommended. To reduce the possibility of "breakouts" every effort should be made to locate and treat all green infested trees during the piling and burning operation.

3. Chemical Control. Chemical formulation recommended for southern pine beetle control is a 1/2 percent Lindane spray with No. 2 fuel oil as the carrier. This may be formulated from a 20 percent Lindane emulsifiable concentrate or oil concentrate at the rate of 11 pints of concentrate in enough fuel oil to make 55 gallons of spray. (Ratio of one part 20 percent Lindane EC to 39 parts No. 2 diesel fuel.)

   Cut, limb and buck all infested trees into workable lengths. Spray the infested bark surface to the point of run-off. A compressed

air sprayer (3-gallon capacity or equivalent) is an ideal applicator. Infested logs must be turned two or three times to insure complete treatment of infested bark. Spray stumps and bark removed by woodpeckers. Low pressure sprayers may be used to treat large, accessible infestations.

The order of priority for cutting and spraying infested trees in large spots is the same as paragraph (1) under removal of infested trees by commercial sale or administrative use. Cutting a buffer strip is not recommended. To reduce the possibility of "breakouts" every effort should be made to locate and treat all green infested trees during the chemical control operation.

Never spray trees from which southern pine beetle brood has emerged. Natural enemies of the southern pine beetle in these trees can then complete their development. To prevent aerial spotters from mapping treated spots cut trees with red needles from which beetles have emerged.

Instructions for minimizing the adverse effects of mixing, transporting and storing pesticides, applying pesticides and disposing of pesticide containers and excess chemicals are outlined in section 8.3 of the Forest Service Health and Safety Code and FSM 5242.21. Detailed safety procedures should be outlined in the project suppression plan.

4. Reexamination of Treated Areas. Reexamine areas where infested trees were removed by commercial sales, piled and burned or chemically treated within two or three weeks after treatment to check for additional infested trees. If additional trees are found, treat them.

PRECAUTIONARY PESTICIDE USE STATEMENT

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock and key -- out of the reach of children and animals -- away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on the container.

If your handsbecome contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.

NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the U.S. Department of Agriculture, consult your county agricultural agent or State Extension specialist to be sure the intended use is still registered.

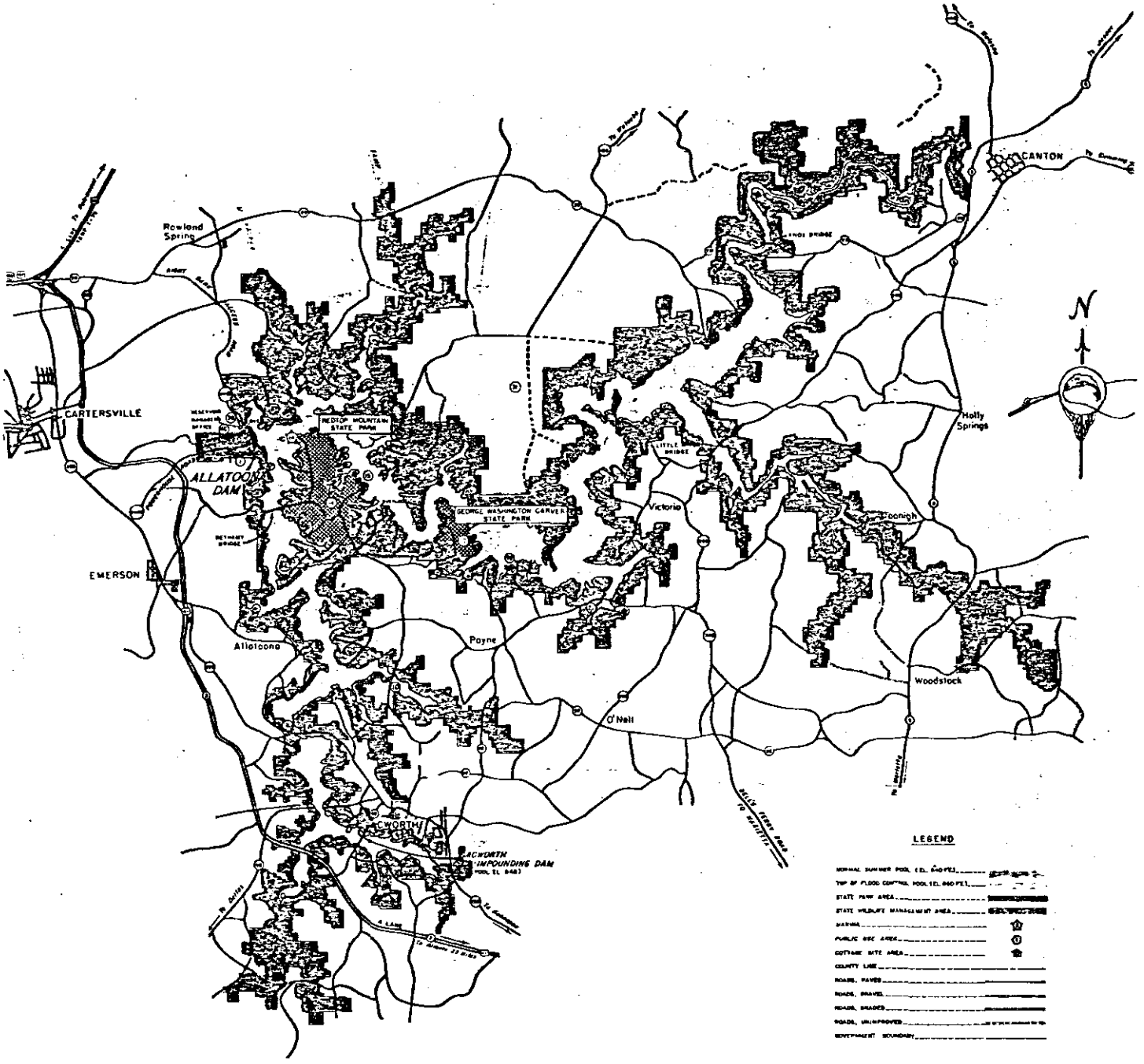

Figure 1. Location of southern pine beetle outbreak at Allatoona Lake near Cartersville, Ga.